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IMPERIAL HUBRIS:

Information Infrastructure and America's Ascent to Global Power

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Discerning the shape of the future from the shards of the past has always been a risky business. At the dawn of U.S. empire in 1898, a few gloomy intellectuals like Mark Twain predicted immediate damage to American democracy, but the impact was both less direct and more pervasive than they could have imagined.[1] At the start of the Cold War a half century later, George Orwell was the first to predict that "the Russian regime will either democratize itself or it will perish"; but not even he could have guessed that this conflict would end with its adversaries America, China, and Russia allied in a new global hegemony.[2]

After a decade of endless wars on the specter of terror, observers are once again divided, even confused about the shape of our global future. American policy makers and their allies worldwide are debating the contradictory signs of slippage in Washington's global reach, weighing the steady rise of its military force against the slow decline of its economic influence. In his 2010 State of the Nation address, President Barack Obama stated flatly, "I do not accept second place for the United States of America." In a follow-up interview, Vice President Joseph Biden called it "ridiculous" that "we are destined to fulfill [historian Paul] Kennedy's prophecy that we are going to be a great nation that has failed because we lost control of our economy and overextended." Instead Biden argued: "We will continue to be the most significant and dominant influence in the world as long as our economy is strong, growing and responsive to 21st-century needs."[3]

Weighing in on behalf of the profession in question, Cambridge historian Piers Brendon backed Biden by dismissing the "doom-mongers [who] conjure with Roman and British analogies in order to trace the decay of American hegemony." Yet he uses similarly superficial analogies from Rome (agricultural economy vs. U.S. industry) and Britain (small island vs. bountiful continent) to confidently assert a continuing American dominion. Just as Brendon waves away current claims of America's descent, so he faults Rudyard Kipling for premature poetic musings about Britain's decline in 1897 ("far-called our navies melt away") when, in fact, the "empire was at its apogee."

Yet even at this height of British might so celebrated that year at Victoria's Diamond Jubilee, one might argue that the seeds of change were already germinating.[4]

After a long, distinguished career as an historian of empire, Eric Hobsbawm used the same British analogy to argue, in a 2005 lecture, that America's attempt at "global supremacy" will "almost certainly fail." For Hobsbawm "empires were mainly built, like the British Empire, by aggression and war" and it was usually winning or losing big wars "that did them in." In between their rise and decline, "empires depend not just on military victories or security but on lasting control" from economic power. As a "middleweight country" Britain, he adds, "knew that it did not and could not rule the world," saving it from "the megalomania that is the occupational disease of world-be world conquerors." Now, as the U.S. loses economic power to Asia, the question remains whether Washington will be "tempted to maintain an eroding global position by relying on political-military force," promoting not order but disorder, not civilization but barbarism.[5]

Yet if we look at Hobsbawm as critically as he looks at us, there is a certain limitation to his focus on the old verities of military power, economic clout, and territorial control, perhaps overlooking less visible elements in a changing global architecture. Just as Hobsbawm grew up as a British subject in world both shaped and shattered by empire, nationalism, and warfare; so I was raised, a generation later, the son of an American electronic engineer on tales of continental radar shields, missile launches, and global telecommunication satellites.[6] Beneath and beyond the bloody spectacle of war and sub-state conflict, we are witnessing, from my generational perspective, the emergence of new system of global hegemony founded not in sea power or even air power, but in worldwide information networks. From this viewpoint, the most significant feature of the past half century was not the dramatic extension in Washington's military, economic, and territorial reach, but instead its ever-expanding information infrastructure. If Britannia once ruled the waves and, lest we forget, the undersea cables, then America now reigns over sky, space, and cyberspace.

My emphasis on information as an index of power is admittedly still somewhat unconventional. In this heated debate over the decline of U.S. global power, most analysts emphasize military might, economic weight, or cultural influence, seemingly talking past each other in a discourse without a shared metric for measuring power. After consulting a range of specialists for its recent study *Global Trends 2025*, the U.S. National Intelligence Council cited "the transfer of *global wealth and economic power* now under way—roughly from West to East—…without precedent in modern history" as the primary factor for predicting that, by 2025, the "United States' relative strength—even in the military realm—will decline and US leverage will become more

constrained." But after shifting its metric from economics to security, this same report concluded with a contradictory assertion: "In 2025, the US will still retain unique military capabilities, especially its ability to project military power globally, that other nations will continue to envy and rely on to secure a safer world."[7] In making this latter assessment, the Council admits that they, along with other analysts, have often underestimated "the role of technology in bringing about radical change"; but still insists that "over the past century, geopolitical rivalries and their consequences have been more significant causes of the multiple wars, collapse of empires, and rise of new powers than technology alone." And even this assessment treats technology as a general economic factor, not as an instrument of state power.[8]

To single out information is not to deny the undeniable import of economic or military power, but to argue that a unique form of knowledge is a significant feature of Washington's ascent to world power--both its unprecedented degree of global dominion and its capacity for unequalled imperial disaster in Vietnam. If information was perhaps no more than a contributing factor in America's rise to global hegemony, it may yet become a causal factor in its future decline.

In reviewing the wars that marked Washington's ascent, a certain style of data management seems a distinctive, perhaps defining attribute, from the pacification of the Philippines after 1898 through the occupation of Afghanistan since 2001. Unlike other world powers, the U.S. imperial state has eschewed deep yet particularistic cultural knowledge and shown instead a consistent preference for universal yet superficial data. Despite ever more capacious systems of data management, this distinctive imperial epistemology has remained a constant through four major conflicts over the span of a century--the pacification of the Philippines after 1898, global intelligence operations during World War II, computerized combat in Indochina, and electronic pacification in the Global War on Terror.

During this century of warfare, Washington's information infrastructure seemed to advance through two basic technological regimes. Driven by America's first information revolution of the 1870s, data management remained, for the first half of the twentieth century, largely manual with typewritten files, numeric codification, and some mechanical assistance for data transmission and tabulation. From the 1960s onward, a second regime emerged, first evident during the Vietnam War, with computerized data and electronic communications for a more effective global reach.

Each sustained military conflict seems to absorb the full array of America's information capacities, temper them in a crucible of conflict, and then reintegrate them into the metropole as an expanded apparatus for state surveillance. Complementing this long-term shift from *in situ* coercion

to information controls, the U.S. government, in marked contrast to the deeply rooted colonial regimes of the high imperial age, has slowly reduced its alien footprint on foreign terrain, initially through collaborating local elites or short-term civilian contractors and, in recent decades, through a gradual levitation of its control apparatus into an ether of aerial surveillance and electronic data systems.

Despite a continuous increase in the mass and velocity of U.S. information systems over the course of this violent century, there has been a discernible continuity in the character of Washington's information infrastructure, both its underlying strengths and weakness. By eschewing the cultural frame of other imperial regimes, the U.S. information paradigm can quickly schematize dense social systems, often on mechanical or biological models, reduce these complex formations to measurable units of data, amass vast quantities of information, and then deploy this data for action. Under certain circumstances, this system is formidable in its capacity to analyze societies as networks to be mapped or targets to be destroyed, readily achieving dominance. And even when defeated, this infrastructure can, like the engineering system that seems to lie at its core, transform military reverse into technological advance, almost as if it contains an embedded drive for ever-increasing efficiency.

Yet this system's strength is also the source of its weakness. Over time, as the U.S. information technology has grown more potent in raw computational power and more remote from nuanced cultural concerns, its capacity for fostering imperial illusion and military miscalculation has increased. Although U.S. systems are unequalled in their phenomenal power to collect and collate almost limitless quantities of political, social, or geographical data, they often struggle to identify appropriate paradigms for accurate analysis of this same information. This limitation manifests itself in propensity for so-called "intelligence failures" from Pearl Harbor through the Cuban missile crisis, the 1968 Tet offensive, and the 9/11 attack.[9] Unlike the cultural frames it eschews, this infrastructure's linear logic struggles to effectively engage more nuanced situations or non-rational social formations--peasant and tribal societies, religious and ideological movements--creating the potential for a sustained series of miscalculations, like the Vietnam War, that can spiral downward unchecked from defeat to debacle. Ultimately, this impressive, even awe-inspiring mass of information can foster a self-referential illusion of omniscience and even omnipotence, as if building data sand castles that can be swept away by tides of change or waves of unanticipated events.

America's First Information Revolution:

These imperial knowledge systems had their origins in what I have called "America's first information revolution." During one extraordinary decade, the 1870s to 1880s, America's information infrastructure emerged from a synergy of innovations in the management of *textual, statistical,* and *visual* data that created, for the first time, the technological capacity for surveillance of the many, rather than a few--a defining attribute, in my view, of the modern state.

During this dynamic decade, the sum of Thomas A. Edison's quadruplex telegraph (1874), Philo Remington's commercial typewriter (1874), and Alexander Graham Bell's telephone (1876) allowed the transmission and recording of textual data in unprecedented quantities, at unequaled speed, with unsurpassed accuracy.[10] These same years also saw a parallel progress in the management of statistical and visual data. After engineer Herman Hollerith patented the punch card in 1889, the U.S. Census Bureau adopted this system in 1890 to enumerate 62 million Americans in just a few weeks, stunning the nation. With Hollerith's Electrical Tabulating machine, clerks could process up to 20,000 cards per day--a success that later led him to become one of the founders of International Business Machines, better known as IBM.[11] Almost simultaneously, the development of photo engraving (1881) and George Eastman's roll film (1889) extended this information revolution to visual data.[12]

With a surprising simultaneity, parallel innovations in data storage allowed reliable encoding and rapid retrieval from this rising tide of information. At opposite ends of same small state in the mid 1870s, Melvil Dewey began cataloguing the Amherst College Library and Charles A. Cutter developed a similar system at Boston's Athenaeum Library that later became the basis for the Library of Congress catalogue--now the world's standard.[13] Within a decade, U.S. libraries, hospitals, and armed forces applied this discovery of the "smart number" to create systems that reduced otherwise unmanageable masses of data to numerical codes for rapid filing, retrieval, and cross-referencing--allowing a modernization of the Federal bureaucracy. In quick succession, the Office of Naval Intelligence created a card method for recording intelligence (1882), and the U.S. Army's Military Information Division, or MID, adopted a similar system three years later. Indicative of the torrid tempo of this information revolution, MID's intelligence cards grew from just 4,000 in 1892 to over 300,000 a decade later.[14]

Since American police circa 1900 were cesspits of corruption, this information revolution came to crime detection from a mix of foreign and domestic sources. At Paris police headquarters in 1882, Alphonse Bertillon discovered modern biometrics by creating a criminal identification system with eleven cranial and corporeal measurements and two facial photographs (front and side view)

that was adopted, within a decade, as the American standard. During the 1890s, the inspector general of police for India, Sir Edward R. Henry, adapted the Bengali legal practice of thumb printing legal documents to create the modern system of fingerprint classification--bringing this system home to Scotland Yard in 1901, and then to America in 1904 when a British police sergeant demonstrated this new biometric for American police chiefs at the St. Louis World's Fair.[15] The coincidental fusing of these two innovations, Henry's fingerprint classification and Bertillon's biometrics, created the modern system of criminal identification.

While an *imitator* in criminal identification, America was an international *innovator* in the field of police and fire communications, with the Gamewell Corporation adapting telegraphy and telephony to create centralized alarms systems that became the world's standard.[16] By 1900, America's cities were wired with a total of 764 municipal fire-alarm systems and 148 police-patrol networks handling a total of 41 million messages in a single year.[17]

But on the eve of empire in 1898, Congress, courts, and civil society still barred any federal application of these innovations, leaving the U.S. government with near zero capacity for law enforcement or domestic security beyond the Customs barrier. In 1900, the United States was still what historian Stephen Skowronek has called a "patchwork" state, a weak state, leaving ample room for modernization that came, with stunning speed, in the imperial decades that followed.[18]

An Exceptional Empire:

After 1898, the conquest of the Philippines made the United States, for the first time, an imperial power, unleashing the potential of its new information technology and launching Washington on a gradual ascent to global power. At what might be mid point in an "American century," from 1950 to say 2050, it seems timely to pose a key question that most U.S. historians have failed to ask or answer.[19] What kind of empire is this American imperium--that is, how does it manage its administration, pacification, and, most importantly, its information? To engage this question, we might best turn to the Philippine Islands which served, after 1898, as Washington's first major experience of overseas empire and can thus reveal a great deal about its distinctive deployment of information. Were these early American imperialists, like their European counterparts, "orientalists" who used deep knowledge of language and culture for colonial rule?[20] If not, was there another intellectual architecture, a different imperial epistemology, that informed Washington's overseas occupations? If American colonial officials in Manila had little time for the classical or cultural studies that obsessed European orientalists, clearly there must have been some

conceptual framework for rule over an island empire that stretched halfway around the world, from Puerto Rico through the Panama Canal to Hawaii and the Philippines.

The historical record provides little evidence for an American orientalism. To begin with the basics, there was a striking contrast between European and American educational standards for colonial service. Over 90 percent of the 362 British officials selected for the Sudan Political Service from 1899 to 1952 were graduates of elite private schools and leading universities such as Oxford and Cambridge. Among the 509 schoolteachers who arrived at Manila aboard the U.S. Transport *Thomas* in 1901, arguably the most carefully selected of all American officials, 31 had high school diplomas, 121 normal school training, and the rest "some college," a far cry from England's erudite empire builders.[21] In 1919 French trainees for the Moroccan native affairs directorate took 140 hours of Arabic, studied Arab ethnography, and contributed to the scholarly *Revue du Monde Musulman,* while comparable American recruits for the Philippines Constabulary were cadets plucked from private military schools with little training beyond drill and discipline.[22]

With their schoolboy lessons in Latin and Greek, English colonials emerged from Oxford and Cambridge with a classical approach to imperial rule, heading east of Suez to probe textual and archaeological remains for a timeless cultural essence.[23] In colonizing India during the nineteenth century, the British "believed they could explore and conquer . . . through translation" by learning languages, both classical and vernacular, which they "understood to be the prerequisite form of knowledge for all others."[24] With their technical and vocational training, American colonials adapted their new information technology for colonial rule, heading west across the Pacific for hasty, inherently superficial surveys of the Philippine present through census, mapping, meteorology, photography, taxonomy, and surveillance. Few Americans bothered to learn Filipino languages; but thousands taught Filipinos to read English. Instead of career colonials such as the legendary British or Dutch savants who gave their lives to empire, American overseas rule relied on the short-term secondment of consultants and contractors. Within a few years after the capture of Manila in 1898, the U.S. colonial state had mobilized a transitory A-to-Z army of consultants from agronomy through zoology.[25]

Like all imperialists, Americans needed information but seem to have valued a different kind of knowledge. The utilitarian nature of U.S. imperial knowledge emerges by comparing several of Southeast Asia's leading colonial journals--the *Philippine Journal of Science* with its colonial counterparts from French Indochina (*Bulletin de l'Ecole Française d'Extrême-Orient*) and British Malaya (*Journal of the Straits Branch of the Royal Asiatic Society*). Not only were these the

preeminent scholarly journals of their respective colonies, but they were also house organs for prestigious research bodies that embodied each empire's highest ideals. Established in 1898, the Ecole Française d'Extrême-Orient operated four museums, maintained a library in Hanoi with 26,000 titles, and sponsored both archeological and philological research. Established in 1901, the Philippine Bureau of Science had "the finest scientific library in the Far East" with a 137,000 titles and world class research in the natural sciences, epitomized by the botanical publications of its distinguished directors, Elmer D. Merrill and William Henry Brown.[26] Tabulating topics for all 604 articles published in the available issues of these three journals from 1906 to 1916 produces a revealing spectrum of imperial knowledge--with American research focused almost exclusively on the natural sciences (botany, chemistry, entomology, geology, zoology); the French work diametrically skewed toward classical Orientalist studies (art, archeology, history, philology); and the British lying in between with some natural science balancing a preponderance of cultural studies. While the French and, to a lesser extent, the British studied second-hand texts, artifacts of another culture, the Americans were rigorous empiricists who engaged in primary research for 57 percent of 342 articles published in their colonial journal.

Topics of Articles in Learned Colonial Journals, Southeast Asia, 1906-1916*

Nation	***Art***	***Ethno-graphy***	***Culture Misc.***	***History***	***Folk -lore***	***Literary***	***Natural Science***	***Social Science***	***Total Applied***	***Total Culture***
USA	-	22	-	2	-	1	317	4	317	25
Britain	-	19	4	21	26	21	60	13	73	91
France	28	21	1	20	2	24	-	2	2	96

N.B. Journals consulted for the United States of America (USA) were, *Philippine Journal of Science* (volumes 1-10); Great Britain, *Journal of the Straits Branch of the Royal Asiatic Society* (volumes 45-77); and France, *Bulletin de l'Ecole Française d'Extrême-Orient* (volumes 6-9, 11-13, 16-18).

**Art* includes Archeology, Architecture, Epigraphy; *Ethnography* includes Religion; *History* includes legal history and biography; *Literary* includes Linguistics, Philology, Theater; *Social Science* includes Demography, Geography, Politics, Urbanism; *Applied Articles* means those of with a utilitarian application for specific areas of colonial administration.

This stark contrast needs some qualification. The British also attempted, through archeology and cartography, to reduce "India to orderly blocks of empirical information that could be rendered in maps, charts, and glossaries." But these remained "micro-knowledges" subordinated to a "generalized body of knowledge organized at the state level" around Orientalist conceptions from the study of language and culture. There were, moreover, a few accidental American scholars of

local culture, but they were isolated at the periphery of colonial power. On a spectrum of imperial information, the British subordinated technical data to cultural concerns; while the Americans generally did not temper their pragmatism with significant study of language or culture.[27]

If the Europeans prized erudition, the Americans preferred information, accessible and succinct. If European imperialists emphasized deep cultural knowledge of oriental societies for their manipulation from within, American colonials amassed contemporary data for control from without. Instead of immersion in a Philippine past informed by archaeology or philology, it was an American innovation to adapt its new information technologies for hasty, inherently superficial surveys of the Philippine present through cadastral mapping, census taking, geography, photography, police surveillance, and scientific reconnaissance. As products of a utilitarian education system, American colonials favored research for pragmatic or political applications, with all data reduced to compact handbooks exemplified by the encyclopedic *Pronouncing Gazetteer and Geographical Dictionary of the Philippine Islands*, a 933-page "compendium of such information [that] would be practically useful to the American people."[28]

The paragon of this American imperial knowledge was Elmer D. Merrill, the famed botanist who collected a million herbarium specimens as director of the Philippine Bureau of Science, the New York Botanical Garden, and Harvard's Arnold Arboretum. He was known throughout his long, distinguished career, half of it spent in the Philippines from 1902 to 1923, for never going "far below the surface" and for an "ability to deal superficially with extraordinarily large numbers of plants." The rigorous taxonomy that propelled Dr. Merrill's voracious collection, reducing the archipelago's green riot of tropical jungle to 2,136 pages in his *Enumeration of Philippine Flowering Plants*, also infused the epistemology of America's empire, particularly the Army's early intelligence operations. Significantly, the pioneers of military intelligence in the Philippines all had advanced training in the biological sciences in an age when Linnaean taxonomy was ascendant. The Army's earliest analysts, Dean C. Worcester and Dr. Frank Bourns, had first come to the Philippines as zoologists on collecting expeditions; while the founder of its field intelligence, Captain Ralph Van Deman, was a qualified medical doctor. Whether through these specific personalities or the broader ethos of America's information revolution, U.S. intelligence in the Philippines was quintessentially taxonomic in its insatiable appetite for data, punctilious classification, and thin analysis.[29]

If the prime aim of the modern state is, as James Scott argues, to establish metrics for rendering "a social hieroglyph into a legible and administratively more convenient format," then U.S. imperial rule was unrivaled in its ability to "read" alien terrains through such surface

reconnaissance.[30] European scholars of empire such as Niall Fergusson who fault the contemporary American aversion to foreign languages and deep cultural knowledge in the exercise of global dominion fail to grasp the guiding genius of a distinctive U.S. imperial style grounded in short-term service and serviceable information.[31] Yet shallowness should not be mistaken for a want of seriousness. For embedded within this seemingly surface engagement was a relentless drive for omniscience, even omnipotence, imbued with the capacity, if challenged, for a lethal response unchecked by any of the empathy that might have come from a deeper cultural engagement.

Philippine Pacification:

From the moment it landed at Manila in August 1898, the U.S. Army carried the germ of an information infrastructure that would shape the character of the American colonial state. Instead of the antecedent Spanish state's iron garrote that crushed vertebrae in exemplary public executions, the American regime achieved political control over the Philippines through a synergy of its new information technologies--telegraph, telephone, typewriter, photograph, and numbered file. During the four years of formal combat, the Signal Corps laid 10,000 miles of telegraph, allowing instantaneous communications for combat and pacification.[32] Even so, in a sprawling empire of Western plains and tropical islands, only the Philippines challenged America's coercive capacities with a fifteen-year campaign against an extraordinary array of insurgents--national army, urban underground, militant unions, messianic peasants, and Muslim separatists. To contain this ferment, the U.S. regime elaborated its information technologies into colonial controls through a three-tier security apparatus--the U.S. Army's Division of Military Information, the Manila Police, and Philippines Constabulary.

Landing without maps, language, or intelligence, the Army soon became, as a senior intelligence officer put it, "a blind giant" that was "more than able to annihilate, to completely smash" anything it faced but found it "impossible to get any information" about where or when to unleash this lethal force.[33] As it struggled to uproot guerrillas immersed in rugged terrain and hostile populations, the Army slowly discovered the imperative of accurate information and established the first field intelligence unit in its hundred-year history. In December 1900, the Philippine command instructed Captain John R. M. Taylor to expand his small bureau, charged with collecting captured insurgent records, into the Division of Military Information (DMI) with the mission of "collecting and disseminating information that is of great value . . . in fixing the identity" of the enemy. Although it had some success in generating intelligence to identify insurgent officers in the Manila

area, the new unit mainly used library methods, akin to those of the MID in Washington, to codify and catalog the two hundred thousand insurgent documents captured between 1899 and 1901. From these three tons of paper, Captain Taylor eventually selected some fifteen hundred documents for publication in his five-volume study, *The Philippine Insurrection against the United States*--overwhelming, even obscuring all this phenomenally rich textual evidence with a prejudiced analytical paradigm. By filtering his thousand-page history through the dominant racialist frame of his day, Taylor proved blind to the deep cultural wellsprings of Filipino nationalism and portrayed the revolution's leaders as driven by "race hatred and envy and blood lust" to establish, through "fraud and murder," a "Malay despotism," covering "their system of absolutism with the name of a republic." In describing General Emilio Aguinaldo's motivations for returning from exile in 1898, Taylor portrays him fancifully as political primitive who dreams of coming home as "the unconquerable Magdalo, the victor of Noveleta, the chosen one of the sorcerers who weave those mysterious spells which secure men immunity in love and war, …the supreme ruler clothed with all the dark powers of the savage Katipunan."[34] Indicative a recurring problem within the U.S. information system, the lack of an appropriate paradigm for analysis neutralized much of the value of this prodigious data gathering.

After Taylor returned home in early 1901, Captain Ralph Van Deman, later known as the "father of U.S. military intelligence," assumed command of this still embryonic intelligence unit. Juxtaposing his mediocre record prior to this post and his remarkable achievements afterwards as agent of institutional change, it seems that this Philippine imperial warfare proved a transformative experience, for both this officer and his army.[35] Instead of passively compiling documents or venting prejudice like his predecessor, Van Deman quickly developed innovative doctrines for categorizing, disseminating, and operationalizing what soon became encyclopedic information on every aspect of the Filipino resistance--active guerrillas, civilian supporters, finances, firearms, ideology, propaganda, communications, movement, and terrain. With telegraph lines criss-crossing Filipino guerrilla zones and the captain pressing subordinates for fast, accurate information, the DMI's field units proved agile in tracking rebel movements and identifying their locations for timely raids.[36]

Reflecting its voracious appetite for raw data, DMI launched, in March 1901, a "confidential" project to map the entire guerilla infrastructure by compiling information cards for every influential Filipino. From across Luzon, hundreds of Army posts starting sending Van Deman one to two dozen "Descriptive Card of Inhabitants" for each municipality with a detailed enumeration of the subject's physical appearance, personal finances, landed property, political

loyalties, and kinship networks. For rapid retrieval, the DMI's clerks then transcribed these cards into indexed, alphabetical rosters for each military zone. As operations dictated, Van Deman's unit disseminated intelligence among military echelons and civil police via products ranging from a daily summary for headquarters to operational bulletins for field commands. While Van Deman developed new procedures for managing vast amounts of information, his covert operations also revealed the pitfalls of data without paradigm: i.e. a tendency to weave data into a dark tapestry of threat where more sober analysis would have revealed none.[37]

During its three-year pacification of Manila, 1898-1901, the U.S. Army created a metropolitan police force that applied military intelligence and data management to domestic espionage. After the start of formal colonial rule in 1901, Manila's civilian police added the most advanced of US crime control technologies--a centralized phone network, the Gamewell system of police-fire alarms, incandescent electrical lighting for city streets, Bertillon's photo identification, and, finally, fingerprinting. Within just twenty years, Manila's police files would amass 200,000 alphabetized file cards, with photograph and biodata, for a full 70 percent of the population of Manila.[38]

Only weeks after taking office in July 1901, the first U.S. civil governor, William Howard Taft, established the Philippines Constabulary as a long-arm mobile police modeled on Spain's Guardia Civil with the dual mission of counterinsurgency and colonial intelligence. Whenever insurgency, electoral fraud, or official venality threatened the colonial order, Manila imposed central control over remote localities through the Constabulary--which averaged, in the four decades of US colonial rule, only 325 officers, many of them Americans, and 4,700 men, all of them Filipino. The Constabulary's founder was Captain Henry T. Allen, a West Point graduate who had a keen appreciation of intelligence and secret police from years as military attaché at the czar's court in St. Petersburg.[39]

By applying military methods to domestic espionage and creating a civilian auxiliary of several hundred Filipino spies, the Constabulary's Information Division collected masses of data through surveillance, covert penetration, and monitoring of both press and public discourse. All this intelligence flowed into the Division's central office where it was translated, typed, coded via smart-number systems, and filed in dossiers for individual identification or agile juxtaposition for psychological profiling, order-of-battle rosters, and longitudinal studies of entire movements--creating a colonial frame for analysis and action.[40]

The creation of this colonial police panopticon would prove mutually transformative, making the Constabulary an arm of Philippine presidential power throughout the twentieth century, and leaving a lasting institutional imprint on the American state. In the rapid mobilization and social crisis surrounding World War I, colonial security operations provided a blueprint for two new Army commands, Military Intelligence and Military Police, that were central to the formation of the U.S. internal security apparatus. When Washington entered the war in April 1917, its military, after abolishing its fledgling Intelligence Division ten years before, was only army on either side of the Western Front without an intelligence service of any description.

Drawing upon his Philippine experience, Col. Ralph van Deman founded the U.S. Army's Military Intelligence Division in 1917--recruiting a staff that quickly grew from one (himself) to 1,700, and establishing, in just weeks, the entire institutional frame for America's first internal security agency. Just as the colonial Constabulary had used Filipino civilian operatives, so Van Deman designed domestic security as a unique fusion of federal agencies and civilian auxiliaries, lending this apparatus both the societal force and institutional continuity that would mark its operations for the next half-century.[41] In collaboration with the Bureau of Investigation, Col. Van Deman, presided over a wartime counterintelligence auxiliary, the American Protective League, that deployed over 300,000 citizen operatives who, working like Constabulary spies in colonial Manila, amassed a over million pages of surveillance reports on German-Americans in just fourteen months--arguably the world's most extensive and intensive domestic surveillance to date.[42] With this civilian auxiliary devoting millions of man hours to routine security checks, MID's officers were freed for special operations using mail intercepts, covert penetration, and agent provocateur activities to contain a resurgent labor movement--in radical cities like Seattle, ports on both coasts, copper mines in Arizona and Montana, and coal mines nationwide.[43]

Similarly, after six years as chief of Philippines Constabulary from 1907 to 1913, General Harry Bandholtz used it as a model for formation of the U.S. Army's Military Police, or MPs. At the close of World War I, the MPs, as the army's first formal civil affairs unit, supervised the demobilization and post-war occupation of Europe--assigning 32,000 military police to posts in over 400 cities and towns across five nations. [44]

In retrospect, U.S. colonial rule over the Philippines was a transitional regime, moving its global governance from Europe's older territorial colonialism of plantations, police, and bolt-action repression to a postcolonial, supranational regime of military bases, electronic surveillance, and aerial warfare. While the United States conducted surveys and surveillance in its quest for colonial

legibility in the Philippines after 1901, so a century later it would deploy airpower and satellite imagery for the pacification of Afghanistan and Iraq.

OSS in World War II:

Just as World War I forced the formation of U.S. internal security, so World War II extended the nation's encyclopedic information collection beyond the bounds of the country and its island colonies to cover the globe. In establishing the Office of Strategic Services (OSS) as the nation's first international espionage agency in 1941, Washington created a potent mechanism for both covert operations and comprehensive intelligence about foreign societies. While OSS is best remembered for parachuting secret agents behind enemy lines during World War II, its global information gathering was arguably more significant in its long-term impact on both state and society.

Among the new agency's nine branches, Research & Analysis (R&A) was considered by insiders as the "heart and soul" of OSS--distinctive for its application of academic methods to the craft of intelligence in ways that required an unprecedented depth and breadth of international information. After finding the foreign data held by federal agencies "haphazard and indiscriminate," R&A recruited a staff of 1,950 academics, both professors and recent Ph.D.s, and formed them into geographical sections (Near East) and topical units (Maps, Economics) with the mission of conducting both close tactical analysis and collecting, via offices in Europe and Asia, all contemporary data about societies worldwide. Reflecting the American style of imperial epistemology, the OSS was voracious, even indiscriminate in data collection yet agile in its array and display. In contrast to the mere "trickle" of Axis publications reaching the U.S. in 1941, the four OSS collection points in Europe were procuring up to 45,000 pages of foreign publications every week by 1944. By war's end in 1945, R&A had amassed 50,000 books, 300,000 photographs, 350,000 foreign serials, a million maps, and three million file cards--which it used to produce over 3,000 staff studies on matters large and small, whether roads in Libya or the Young Morocco Party.[45]

Under the leadership of gentleman scholar Wilmarth S. Lewis, editor of a forty-eight volume set of Horace Walpole's correspondence, OSS's Central Information Division created a system with "indexing, cross-indexing, and counter-indexing" of those three million file cards for quick answers to questions ranging from electric voltage in Surinam to ranking of bombing targets in Germany. To facilitate operations against Germany, the OSS collected every possible detail about the country's rail network and then arrayed relevant data in maps elegant in their simplicity and readability. Obituaries culled from German newspapers produced, through statistical extrapolation, accurate

order-of-battle estimates, while study of freight rates identified which rail lines were carrying oil for priority bombing. Similarly, an OSS staffer in Pictorial Records, John F. Langan, developed a new system for photo cataloguing by attaching a single microfilm frame to a standard IBM card. By 1944, OSS had some 300,000 photos so filed for rapid retrieval. After the war, the Defense Department placed an initial order for 90 million of these "Langan Aperture Cards" and, by the 1960s, NATO was using 500 million annually. Through such innovative methods, OSS's information operations were surprisingly supple, collecting about every possible topic and then focusing intensely on operational matters.[46]

This American style of information management was also evident in the Southwest Pacific Area, whose commander General Douglas MacArthur excluded OSS from his theater of operations. To prepare for the invasion of the Philippines in 1944, his Allied Geographical Section amassed all extant information, textual and graphic, about every major island and arrayed this data in over a hundred geographical handbooks. While the "terrain studies" for headquarters came in large quarto editions with detailed fold-out maps, field commanders carried pocket-sized "terrain handbooks" to guide them from beachhead to island interior--with coastal photo panoramas, ecological graphics, municipal street maps, and details of infrastructure, population, geography, and human settlement.[47]

These wartime efforts had a lasting impact on both state and academy. After assembling the nation's finite coterie of foreign area experts from government and universities, the OSS amplified their skills and then, at war's end, returned these specialists to the academy where they further elaborated the country's capacity for foreign area studies. Apart from Harvard's William L. Langer who headed R&A, the branch employed at least 50 historians who achieved eminence in the study of foreign societies after the war--including, John K. Fairbank, Moses Hadas, Hajo Holborn, Michael Petrovich, Carl E. Schorske, and L.S. Stavrianos. In his study of OSS, Robin Winks concludes that "R&A in particular, though its methods and its alumni, exercised a fundamental influence on…American graduate education in the growth period after World War II"--serving as catalyst for "the reorganization of knowledge," promotion of area studies, and elevation of American scholarship from secondary status to "predominant on the world scene." Indeed, in 1964 the president of the Ford Foundation, McGeorge Bundy, stated: "The first great center of area studies in the United States was not located in any university, but in…the Office of Strategic Services. In very large measure the area study programs developed…in the years after the war were manned, directed, or stimulated by graduates of the OSS."[48]

In the postwar period, this combination omnivorous data gathering and agile array was evident in institutions inspired by the wartime work of OSS. Building upon planning by the Library of Congress, Carnegie Foundation, and Wilmarth Lewis, some fifty-four major university libraries agreed to divide up the world and, by 1961, were collecting cooperatively from 145 nations worldwide--Dartmouth for Canada, University of Florida for Surinam, etc.[49] Similarly, the OSS system of global omniscience influenced the founding of the Human Relations Area Files (HRAF) at Yale in 1949 which compiled all published ethnographic data worldwide and then compressed the pages, through photo reduction, into a single, capacious file in the basement of Sterling Library**.** Apart from copies held by twenty universities nationwide, the full file was deposited at CIA headquarters where it was in active use until 1967.[50] Building upon the wartime Foreign Broadcast Monitoring Service (FBMS), the CIA's Foreign Broadcast Information Service (FBIS) became an exemplar of expanded data collection in service of global dominion, extending R&A's information model into the Cold War era. From nineteen listening posts overseas, FBIS conducted daily monitoring of radio and television broadcasts worldwide for rapid translation into English and wide dissemination via indexed circulars. In the aftermath of the Cold War, FBIS was nearly closed and its staff was slashed by 60 percent. But on the old OSS principle that 90 percent of critical intelligence is in the public domain, FBIS was revived in November 2005 as the CIA's Open Source Center, tasked with "open Internet exploitation" worldwide and focused on some 300 significant jihadist websites.[51]

In a sense, OSS represents the apotheosis of knowledge gathering within the technological limits of America's first information regime. From Manila in 1901 through Washington in 1945, this regime used similar, labor-intensive methods, requiring that information be manually typed, coded, filed, and retrieved, with some limited mechanical assistance for transmission and tabulation. Clearly, there were limits, even under conditions of wartime mobilization, to this manual regime's capacity for data management. Indeed, by early 1944 OSS found itself "drowning under the flow of information," collecting masses of publications that "could not be indexed, much less abstracted, and the material often had to remain inert."[52] In its overly ambitious global reach, these voracious intelligence operations required legions of stenographers, operators, and file clerks that, absent the subsequent automation, might have eventually imposed some informational limits on the exercise of U.S. global power.

Automated Warfare in Indochina:

The Vietnam War marks a watershed in U.S. global dominion, with a major failure of conventional military operations and the first attempt at computerized counterinsurgency. In an application of America's second information revolution, Washington applied automated data management to the pacification of South Vietnam through a cluster of computerized programs--the CIA's Phoenix program for the covert eradication of the Viet Cong infrastructure, the Hamlet Evaluation Survey (HES) to complement this pacification, and the Combined Documents Exploitation Center (CDEC) to process millions of captured enemy papers. More ambitiously still, the U.S. Air Force applied innovative computer systems, under Operation Igloo White, to build an electronic battlefield of sensors for bombardment of enemy logistics inside southern Laos. The sum of these programs represented a shift from an earlier information regime of manual cum mechanical information to a new methodology of automated data management.

Reflecting the data-dense style of U.S. foreign operations, this search for innovative counterinsurgency in Vietnam was complemented by the Pentagon's comprehensive global review of special warfare. During his first weeks in office in 1961, President John F. Kennedy launched the country's counterinsurgency era with his National Security Action Memorandum No. 2, ordering the defense secretary to emphasize "the development of counter-guerrilla forces." As the military services competed for resources within this new mission, the Army took the lead with new counterinsurgency training at Ft. Bragg and Ft. Gulick, Canal Zone, complementing this curriculum with systematic research into guerrilla and counter-guerrilla operations.[53] According a leading specialist, Dr. Adam B. Schesch, the Pentagon sponsored some 5,000 detailed studies of insurgency worldwide from 1961 to 1975, generally probing "questions and answers that are measurable and mechanical' and "reducing research findings to the narrowest explanations" in an ambitious effort "to construct the equivalent of a chemical Table of the Elements for … 'unconventional warfare.'"[54] One such study by the Special Operations Research Office at American University, a major Army contractor, began by compiling "a single source book of information on…the current state of knowledge about undergrounds," then reduced seven key case studies to three key statistical ratios, and concluded confidently that even in the least favorable conditions well-planned "counterinsurgency campaigns…broke the back of the revolutionary movement." Even in this search for innovative military doctrine, there was, therefore, an underlying continuity in U.S. imperial epistemology--massive empirical research, disaggregation of complex social problems into measurable units, and application of findings via succinct Army field manuals and warfare courses.[55]

For nearly fifteen years, the CIA and U.S. military applied their most advanced information technology to eradicate the communist Viet Cong underground through interrogation, incarceration, and assassination. As the CIA brought this covert war to Vietnam's villages in 1965, its senior field operative William Colby launched the Counter Terror (CT) program described by an Agency analyst as an attempt "to use...techniques of terror--assassination, abuses, kidnappings and intimidation--against the Viet Cong leadership." Colby also supervised construction of the Provincial Interrogation Centers where CIA employees "directed each center's operations, much of which consisted of torture tactics against suspected Vietcong."[56] By 1965–66, the Agency had thus developed a nationwide intelligence-collection system that reached from the National Interrogation Center in Saigon down to the society's rice roots via the PIC operations.

The program expanded in 1967 when the CIA established a centralized pacification bureaucracy, the Civil Operations and Rural Development Support (CORDS), that drew all the scattered counterinsurgency operations into a covert assassination campaign later named the "Phoenix program." With limitless funding and unrestrained powers, Phoenix represented an application of the most advanced U.S. information technologies to the task of destroying the Viet Cong Infrastructure (VCI) in the villages. To head CORDS as his pacification czar with the rank of ambassador, in May 1967 President Lyndon Johnson dispatched Robert W. Komer, a tough CIA operative known as the "blowtorch," who soon learned from his new Saigon deputy, Agency analyst Nelson H. Brickham, that "no effective attack has yet been devised for…degradation of VC infrastructure."[57]

To correct these "numerous grave weaknesses," Brickham recommended a "centrally designed and controlled reporting and information system" using "automated data processing systems which have a greatly expanded capacity for storing, manipulating and reproducing information." With a management model borrowed from the Ford Motor Company, he proposed formation of a centralized pacification committee in Saigon with Komer as chair and a "board of directors" drawn from all US intelligence organizations, civil and military.[58] So persuaded, in June 1967 Ambassador Komer launched the ICEX program (Infrastructure Intelligence Coordination and Exploitation) for "the identification and destruction of the infrastructure."[59] A year later in July 1968, President Nguyen Van Thieu issued a directive establishing Phoenix in its final form as "a program…to bring about collaboration…among all government agencies which could contribute to the identification and neutralization of the VCI."[60] In Saigon, the fully evolved Phoenix program used sophisticated computer information banks, located at the Combined Intelligence Center

Vietnam (CICV), to centralize all data on the Viet Cong underground, identifying key communist cadre for interrogation or elimination by the CIA's counter-guerrilla teams, the Provincial Reconnaissance Units which were attached to the Agency's forty plus Provincial Interrogation Centers.[61]

In theory, centralized data dissemination would catalyze provincial arrests, and these interrogations would in turn generate more names for the central computers, producing a potent synergy of information and coercion that would sweep the Viet Cong from the villages. Instead, this circular flow of information, as shown in a schematic of Phoenix provincial operations, created a hermetic architecture without any external check against false identification of Viet Cong suspects or inflated aggregation of such actions. (See figure, Viet Cong Infrastructure.)[62]

After three years of operations from 1967 to 1969, the CIA found that Phoenix had met its objectives by reducing the Viet Cong infrastructure to 63,000 members. Indeed, through what the U.S. mission called an "intensive effort at computer mechanization," the program had developed metrics that encouraged "maximum incentive toward elimination of higher level VCI," raising the monthly total of those "captured, rallied, killed" from 1,200 in 1968 to 1,800 in 1969.[63] By 1972, the Phoenix claimed 81,740 Viet Cong eliminated and 26,369 prisoners killed.[64] In sum, the Phoenix program was, in the Agency's view, a success.

Despite this positive official assessment, CIA officials have since reported, in memoirs and internal reviews, that Phoenix produced many casualties but few verifiable results. During a tour of the program's interrogation centers near Saigon in 1969, a CIA regional chief, Orrin DeForest, was "disgusted" to find them "irretrievable, just a horrible mess…commonly considered the sites of the worst tortures."[65] Assigned to this same region as CIA chief for Gia Dinh Province in 1968, Ralph W. McGehee found himself in "the middle of an insane war" that mocked the CORDS program's statistical indices of progress. "The CORDS meetings," he recalled, "the killings by the CIA's assassination teams--the Provincial Reconnaissance Units--and the absurd intelligence-collection activities progressed as in a Greek tragedy."[66] As he left Saigon in 1970, the Phoenix program's founder, Robert Komer, described it as "a small, poorly managed, and largely ineffective effort." Indeed, one Pentagon contract-study of Phoenix found that, in 1970-71, only 3 percent of the Viet Cong "killed, captured, or rallied were full or probationary Party members above the district level." Over half the supposed Viet Cong captured or killed "were not even Party members."[67] CIA veteran McGehee was even blunter, stating: "The truth is that never in the history of our work in Vietnam did we get one clear-cut, high-ranking Viet Cong agent."[68] Not surprisingly, a pacification effort

based on such problematic programs failed to crush the Viet Cong or win the support of Vietnamese villagers, contributing to the ultimate U.S. defeat.[69]

In a parallel effort, CORDS conducted a computerized evaluation of pacification, called the Hamlet Evaluation Survey (HES), that contributed to these data-driven illusions of success. According to William Colby, the HES started in 1966 when Defense Secretary McNamara asked the CIA to develop a "technique by which to measure trends in pacification," and CORDS chief Komer created "a system for detailed monthly evaluation of…problem areas for…12,600 hamlets." Using a five-point scale from A (secure) to E (contested), every month some 220 U.S. military advisers submitted ratings for villages in their districts which were processed electronically and displayed in an IBM dot-matrix map of South Vietnam's security. Beneath the high-tech patina, this remained a cursory, subjective procedure that pronounced 75 percent of South Vietnam's population pacified by late 1967--the eve of the disastrous Tet Offensive. To correct this subjective bias, in late 1968 Colby, who had succeeded Komer as CORDS chief, contracted Control Data Corporation to develop an automated model called HES 70 as "a highly integrated *man-machine* interface."[70] Despite this quixotic quest for methodological rigor, the population rated "secure" continued to climb relentlessly to 84 percent. In the end, this constant inflation in security indices confirmed Colby's warning that inaccurate reporting might lead Saigon "to delude itself about its standing with its own people"--a delusion that ended abruptly when South Vietnam collapsed with stunning speed in April 1975.[71]

The final and most critical element in automated pacification was arguably the Combined Documents Exploitation Center (CDEC). When the ground war heated up in October 1966, the assistant chief of staff for intelligence at U.S. headquarters in Saigon formed CDEC to classify, translate, and analyze the millions of captured enemy documents through a computerized retrieval system. As documents flooded into CDEC's Saigon warehouse at the rate over three million pages every year, clerks identified key texts for translation, copying, and selective distribution. In March 1967, for example, 495,184 pages of captured documents arrived of which 58,667 were deemed of "intelligence value" and tagged for translation. Instead of using standard microfilm, the Center copied all documents on reels of film stock so a bar-code identification could be encrypted inside the film's sound track, allowing automated searching using the "state-of-the-art" FILE/SEARCH system. To disseminate this information, CDEC also published at total of 52,000 "Bulletins" with ten selected documents in each issue. Over time, however, the automated system proved "cumbersome and time-consuming," and analysts "took to wandering into the warehouse to grope for what they needed."[72]

If we compare CDEC with the Philippine Insurgent records, this Vietnam effort represented, at base, an elaboration of the information system that Captain Taylor had developed back in 1901 to defeat the Philippine revolution. Apart from obvious acceleration in the automated searching, there was an underlying similarity in the omnivorous collection and assiduous filing of these captured enemy documents, Filipino and Vietnamese. There was, moreover, a certain continuity in the failure of both systems to make meaningful use of the dense cultural and political data encoded within the texts of those same captured documents. Through this overall focus on collection and codification of data absent nuanced analysis, the U.S. pacification effort in Vietnam fostered a false sense of knowledge and control unwarranted in light of unfavorable long-term trends that somehow escaped all this enumeration.

The U.S. experiment with the electronic bombardment of the Ho Chi Minh trail in southern Laos proved equally illusory. As the North Vietnamese supplies poured down the Ho Chi Minh Trail through southern Laos in 1966, both the Pentagon and its Saigon command recognized this fatal threat to their basic "attrition strategy" of destroying more manpower and material inside South Vietnam than the enemy could re-supply from the North. Midst this serious strategic crisis, Defense Secretary McNamara, the living embodiment of U.S. imperial epistemology, ordered a feasibility study that found building a physical border barrier would require a daunting 1,800 searchlights, 72,000 floodlights, 140,000 troops, ten million land mines, as well as 206,000 tons of materials and 48 months for construction. Instead of this latter-day "Maginot Line," McNamara opted for a billion-dollar "electronic barrier" with fortified strong points just below the DMZ border in South Vietnam and an "air-supported anti-infiltration subsystem" astride the Ho Chi Minh Trail in nearby Laos. To overcome Air Force opposition to an untested system it deemed unworkable, McNamara invested an Army lieutenant general, Alfred D. Starbird, with special command authority and, with a year, he merged the military's most advanced technology into an air interdiction system driven by sensors and computers. By the time McNamara left office in 1968, fixed bases below the DMZ such as Khe Sanh had proven untenable, but combat tests of General Starbird's new technology had established its viability for aerial interdiction inside Laos.[73]

Under "Operation Igloo White" from 1967 to 1973, the US Air Force (USAF) assigned 50,000 airmen at bases in northeast Thailand for an electronic bombing campaign against truck convoys on the Ho Chi Minh Trail. After two years of desultory bombing of just 86,000 tons in 1965-66, the Air Force upped tempo under Igloo White to drop a million tons of bombs over the next five years, equal to the total for the entire Korean War. To detect truck convoys inside a narrow

corridor in southern Laos only 50 miles wide and 250 miles long, the Air Force expended $800 million per annum at operation's peak to lace these densely forested hills with a network of 20,000 acoustic, seismic, thermal and ammonia-sensitive sensors. While the "Acoubuoy" was parachuted into trees to listen, the "Spikebuoy" and ADSID (Air-Delivered Seismic Intrusion Detector) were dropped into the soil with protruding antenna camouflaged to look like local weeds. Their electronic signals were transmitted to EC-121 communications aircraft loitering at 16,000 feet in four "orbits" over southern Laos which used thirty-one on-board electronic systems to transmit the data to a nearby air base in Thailand.[74]

At the USAF base in Nakhorn Phanom, Thailand, the Infiltration Surveillance Center was housed inside a massive, air-conditioned concrete bunker with 400 servicemen and two powerful IBM 360/65 mainframe computers. Built in mid 1967 by the Air Force Electronic Systems Division, with support from IBM and Magnavox, the main building covered 20,000 square feet and housed the key data processing and communications equipment, supported by six 200-kilowat-diesel generators and a dozen antennas. At the heart of this massive building was the sprawling Plot Room with "electronic display of sensor locations and activations." Inside a glass-encased balcony above, two air force officers, a forward air controller and a sensor interpreter, sat before two IBM 2260 Display Terminals, dubbed "Commando Bolt," that translated all the electronic sensor signals into "an illuminated line of light" called a "'worm' which moved down the map at a rate equal to the computed target speed." After confirming the strike data, the Center launched F-4 Phantom jets over Laos where Loran radio signals then locked into their guidance system and directed them to the target. There the pilot could allow the IBM computer to release his laser-guided bombs automatically or take control for delivery with on-board surveillance equipment.[75]

In addition to the fighter-bombers, the new AC-130 "Specter" turboprop gunships--equipped with a night-vision "starlight scope," infrared sensors, and magnetic detectors to sense truck ignitions--loitered over the trail for hours, responding to electronic network data with mini-guns firing 6,000 rounds per minute. According to the Air Force, AC-130 operations over southern Laos yielded an average of 9.72 trucks destroyed per sortie.[76] Concerned about losing the lumbering EC-121 turboprop to antiaircraft fire, the Air Force retrofitted several Beechcraft Debonairs as "radio controlled drones" and used them as a signal relay platforms until two crashes forced suspension of the program.[77]

In its internal assessments of this electronic warfare, the Air Force was surprisingly sanguine. An early evaluation by the Pacific Air Force in 1970 found "the Igloo White system was both

effective and accurate in its analysis of traffic," accounting for 40 percent of targets attacked.[78] In a later phase from October 1970 to May 1971, the USAF reported destruction of an incredible 25,000 North Vietnamese trucks in southern Laos. The digital worm crawling across Igloo White screens identified a truck at certain coordinates, aircraft bombed that location, and the worm, after a lag of twenty minutes, disappeared--evidence, the Air Force asserted, that the truck convoy had been destroyed. Even though 25,000 trucks burning in a limited area during a single six-month period should have left countless craters filled with flames, smoke, and twisted metal, the Air Force could not produce corresponding visual confirmation.[79] Significantly, the elaborate USAF schematic of information flow from sensor to bombing shows a sealed information loop insulated from any independent verification, removing any restraint on such inflated estimates. (See figure, "Air-Supported Infiltration Interdiction Concept.")[80]

Even in the white heat of war, these Panglossian claims attracted sharp criticism. In April 1971, the U.S. Senate Foreign Relations Committee pointed out that Air Force claims for trucks destroyed in Laos exceeded embassy estimates for all the trucks in North Vietnam. The CIA was similarly skeptical and reduced Air Force claims by 75 percent.[81] "I don't think that anyone can prove," said the 7th Air Force's deputy operations chief, General Alton D. Slay, of the computerized targeting, "that we killed a single truck with the Commando Bolt operation."[82] While the Air Force claimed that its bombing destroyed 80 percent of enemy trucks on the Ho Chi Minh Trail, Hanoi reported only 15 percent lost.[83] After North Vietnamese tanks and trucks poured down the trail for the massive Nguyen Hue offensive by 200,000 troops in early 1972, one analyst for the U.S. Pacific Air Force advised his commander: "Due to the duration, intensity, and geographical extent of the current NVN offensive . . . everyone now recognizes that our estimates were in error." In the end, concludes an official Air Force history, the sophisticated sensors and massive U.S. bombardment were defeated by the "thousands of North Vietnamese soldiers and local laborers [who] kept the Ho Chi Minh Trail open by constructing, camouflaging, and repairing…the roads," as well as by the Vietnamese anti-aircraft gunners who shot down 150 U.S. aircraft.[84] In retrospect, Operation Igloo White seems extraordinary for both the boldness of its conception and the scope of its failure.

Although Igloo White failed in its immediate objectives, it was nonetheless transformative within a long arc of technological progress toward elevating combat into an extra-terrestrial ether. By integrating electronic sensors in lieu of human intelligence, drones in lieu of conventional aircraft, and computerized targeting in lieu of visual contact, Igloo White made a bold technological leap toward a future electronic battlefield. This operation developed the separate components--

computers, drones, electronics, and sensors--which are today used in air operations over Afghanistan and will become components in some future "network centric warfare" that will, via aerial-satellite interface, ultimately reduce or eliminate any terrestrial footprint. Alone among the thousands of American observers in Indochina, a young aid worker assigned to Laos named Fred Branfman saw the future implications of air operations that produced "maximum destruction of the enemy…at minimum risk to American lives." He predicted, as early as 1970, that "the massive air war" in Laos "has devised a pattern of warfare likely to become the model for all future attempts to fight localized guerrilla conflicts."[85]

In retrospect, the Vietnam War marks a watershed for Washington's global information architecture. Computerized data collection fostered an illusion that pacification was defeating the Viet Cong in Vietnam's villages, while automated bombing created the delusion that the air war was destroying North Vietnam's supply effort--critical misperceptions that contributed to the ultimate communist victory. At the time, this agonizing defeat seemed nothing less than a devastating blow to American power, sparking deep domestic divisions and weakening U.S. military posture worldwide. At its Cold War peak of military might, Washington had deployed half its ground forces plus a third of its airpower and dropped seven million tons of bombs, over three times its total tonnage in World War II. In pursuit of a chimerical victory, the White House persisted in a losing war for ten years at the price of 58,000 dead and $111 billion, more than the cost of World War I and Korea combined.[86] In the end, the U.S. military was so weakened by this divisive defeat that it took ten years before it would intervene again at Grenada in 1983, a tiny Caribbean island it overwhelmed with 7,000 troops and a Navy armada, and full generation before it could wage another major war, against Iraq in 1991. Yet at a deeper level this defeat and its failures in information warfare proved self-correcting, recast by the long arc of technological progress into seminal experiments in electronic warfare that would, decades later, prove so effective in Iraq and Afghanistan.

Global War on Terror:

Building upon these technological advances in Vietnam, Washington has fought Global War on Terror through an expanded information infrastructure with embedded electronic surveillance worldwide, biometric identification in occupied territories, and aerial force delivery on the battlefield. After September 2001, President George W. Bush's Global War on Terror plunged the U.S. military into four simultaneous counterinsurgency campaigns--in Somalia, Iraq, Afghanistan,

and the Philippines--transforming a vast swath of the planet into an *ad hoc* "counterterrorism" laboratory.

In this seamless global war, overseas combat experiments with electronic intercepts, drones, and biometrics has complemented a marked expansion of domestic surveillance through embedded data sweeps. Sometime in 2002, President Bush gave the National Security Agency (NSA) secret, illegal orders to monitor domestic communications through the nation's telephone companies and private financial transactions through SWIFT, an international bank clearinghouse.[87] In 2004, the FBI started its Investigative Data Warehouse as a "centralized repository for … counterterrorism."[88] Within two years, it contained 659 million individual records--social security files, drivers' licenses, and private finances--accessed by 13,000 Bureau agents and analysts making a million queries monthly.[89] By 2009, when digital rights advocates sued for full disclosure, the database had already grown to over a billion documents.[90] Simultaneously, the NSA launched a top-secret data base called "Pinwale" to routinely scanned countless "millions" of domestic electronic communications without regard for whether they came from foreign or domestic sources.[91]

Under President Barack Obama the expansion of digital domestic surveillance has continued unchecked. In mid 2009, his administration established a new military cybercommand of 7,000 Air Force employees at Lackland Air Base in Texas tasked with disabling enemy computers and repelling hostile cyber-attacks on U.S. networks -- with scant respect for what the Pentagon calls "sovereignty in the cyberdomain." [92]

As in past wars, much of the innovation in U.S. information systems has been forged in the white heat of foreign intervention. For five years, 2004 to 2008, the occupation of Iraq served as a crucible of counterinsurgency, forging a new system of biometric surveillance and digital warfare. These advanced biometrics first appeared in the smoking aftermath of "Operation Phantom Fury," a brutal, nine-day battle that U.S. Marines fought in late 2004 to recapture the insurgent-controlled city of Falluja. Bombing and artillery destroyed at least half the buildings and sent most of the 250,000 residents fleeing. Marines then forced returning residents to wait at checkpoints under a desert sun for fingerprints and iris scans. Once inside the city's blast-wall maze, residents had to wear identification tags for compulsory checks to catch infiltrating insurgents.[93]

The first hint that biometrics were helping to pacify Baghdad's far larger population of seven million came in April 2007 when the *New York Times* published an eerie image of American soldiers photographing an Iraqi's eyeball--clear signs of a biometric system with digital cameras for U.S. patrols, wireless data transfer to a mainframe computer, and a database to record all possible adult

Iraqi eyes.[94] Indeed, eight months later, the *Washington Post* reported that the Pentagon had collected over a million Iraqi fingerprints and retinal scans.[95] By mid-2008, the U.S. Army had also confined Baghdad's population behind blast-wall cordons and was checking Iraqi identities by satellite link to a biometric database in West Virginia. Simultaneously, U.S. snipers and elite combat patrols were accessing this database by portable labs called Joint Expeditionary Forensic Facilities. "A war fighter needs to know one of three things," explained the inventor of this lab-in-a-box. "Do I let him go? Keep him? Or shoot him on the spot?"[96]

Lest such developments seem fanciful, we should recall that *Washington Post* reporter Bob Woodward has attributed the success of President Bush's 2007 troop surge in Iraq not to boots on the ground but to bullets in the head. Starting in May 2006, American intelligence agencies launched a Special Action Program using "the most highly classified techniques and information in the U.S. government" in a successful effort "to locate, target and kill key individuals in extremist groups such as al Qaeda, the Sunni insurgency and renegade Shia militias." Under General Stanley McChrystal, later U.S. commander in Afghanistan, the Joint Special Operations Command (JSOC) deployed "every tool available simultaneously, from signals intercepts to human intelligence" for "lightning quick" strikes. One intelligence officer reportedly claimed that the program was so effective it gave him "orgasms." President Bush called it "awesome." Although refusing to divulge details, Woodward himself compared it to the Manhattan Project in World War II.[97] This Iraq-based assassination program operated in twenty countries across the Middle East on the authority the Pentagon granted JSOC in early 2004 to "kill or capture Al Qaeda terrorists," producing dozens of lethal strikes by airborne Special Operations forces.[98]

Another crucial technological development in Washington's secret war of assassination has been the armed drone, or unmanned aerial vehicle, whose speedy development has been another by-product of Washington's global counterterrorism laboratory. Launched as an experimental craft in 1994, the pilotless "Predator" drone was first deployed in 2000 for surveillance under the CIA's "Operation Afghan Eyes," tracking Osama Bin-laden and producing some "truly astonishing" imagery.[99] Although this aircraft was not armed for lethal strikes until after September 2001, by 2006 the Bush administration was making extensive use of the MQ-1 Predator now armed with Hellfire missiles for CIA assassinations. Unlike conventional jet aircraft that needed massive bases proximate to the target, the low-cost "killer scout" Predator could be launched from a light footprint and operated remotely from bases half a world away in Nevada and Arizona via satellite guidance.[100] In July 2008, the Air Force deployed the larger, more lethal MQ-9 "Reaper" drone with "persistent

hunter killer" capabilities---sixteen hours continuous flying time, 50,000 feet altitude, air speed of 220 miles per hour, sophisticated sensors for "real time data," and fourteen air-ground missiles.[101] By early 2009, the Air Force drone fleet had expanded to twenty-eight Reapers and 195 Predators in Afghanistan and Iraq--flying thirty-four surveillance patrols daily, sending 16,000 hours of video every day, and firing missiles on 244 missions in 2007-2008. Though they seemed stunningly advanced, one defense analyst called these second-generation drones "very much Model T Fords," predicting major advances in future capability.[102]

Although the mass media focused on the remote-control assassinations, the real significance of the drone lay in its role as a component in an emerging electronic battlefield. In July 2008, the Pentagon proposed an expenditure of $1.2 billion for a fleet of fifty light aircraft loaded with advanced electronics to loiter over battlefields in Afghanistan and Iraq, bringing "full motion video and electronic eavesdropping to the troops."[103] By late 2008, night flights over Afghanistan from the deck of the USS *Theodore Roosevelt* were using sensors to give American ground forces real-time images of Taliban targets as small as a few warm bodies huddled in darkness behind a wall.[104]

Under President Obama, Afghanistan has become a new frontier for testing and perfecting Washington's electronic warfare. After several years of collateral damage from conventional bombing produced rising civilian opposition, the U.S. command corrected, shifting to expanded ground operations, carefully targeted bombing, and aerial drone assassinations. In the first months of his administration, CIA Predator drone strikes escalated in the Afghan-Pakistan tribal borderlands, using a top-secret mix of electronic intercepts, satellite transmission, and digital imaging to kill half of the CIA's twenty top-priority al-Qaeda targets.[105] Over a fifteen-month period in 2009-2010, escalating drone strikes reportedly killed 520 people inside Pakistan, with 410 dead described as "militants" and the balance innocent civilians. [106]

Moreover, the biometric identification used in Iraq has been imported into Afghanistan. By early 2010, allied forces had computerized data bases with tens of thousands of names for identification of Taliban partisans in an otherwise faceless tribal society. Moving across the Afghan countryside, U.S. combat patrols can check suspicious identities by scanning local Afghanis into the military's Biometric Automated Toolset (BAT)--an elaborate acronym for a simple laptop computer equipped with "separate plug-in units that record mug shots, fingerprints and retinal characteristics" for satellite transmission to a data base in the United States.[107] Adrift in Afghanistan's dense cultural landscape, the Army has, since 2008, integrated academic anthropologists into Human Terrain

Teams that assist combat brigades by reducing social complexities to "ethnographic intelligence." According to a Pentagon spokesman, such human terrain mapping "enables the entire kill chain."[108]

Despite all the technological wizardry, Washington's war effort in Afghanistan may yet founder on another dense social formation, akin to Vietnam, that resists linear response to escalating coercion, forcing an involution of its information systems with ever more elaborate data increasingly divorced from local realities. In January 2009, the Pentagon released its comprehensive assessment of *Progress toward Security and Stability in Afghanistan*, a document very much in the style of American imperial epistemology with dense data compressed in lean prose and clear graphics--power-point management schema, color-coded strategic maps, graphics of allied progress, and tabular representations of economic, social, and political trends. Although not lacking in criticism, the report is devoid of clear synopsis, explanatory metaphors, or, most importantly, searching analysis of the social, ideological, or cultural forces behind the government's failure and the insurgents' success. In short, it is a report that measures the quantifiable indices of allied progress and implicitly discounts the unquantifiable factors of culture and ideology that favor the insurgents, fostering a false sense of a complex but contained situation susceptible to future resolution.[109]

In late 2009 as President Obama was announcing his Afghan surge, the NBC News correspondent in Kabul, Richard Engel, uncovered an elaborate power-point slide that seems emblematic of the underlying weakness in America's imperial epistemology. Titled "Afghan Stability/COIN Dynamics," the graphic purported to present every element in this complex war--civil and military, material and ideological--on a single chart with 13 major variables (e.g. "Popular Support"), each in turn influenced by a dozen sub-factors (e.g. "Perception of Coalition Intent"), all woven together by curving arrows into a single, oval-shaped web. "For some military commanders," NBC reported, "the slide is genius, an attempt to show how all things in war--from media bias to ethnic/tribal rivalries are interconnected." Other military officers see it as "an assault on logic" of the sort that "happens when smart people are asked to come up with a solution to the wrong question."[110]

Indeed, one general who had banned power point when he commanded U.S. forces in northern Iraq, General H.R. McMaster, commented: "It's dangerous because it can create the illusion of understanding and the illusion of control." Indeed, this graphic inserts the usual circular flow chart of U.S. operations, like those for Phoenix or Igloo White, into a larger, comprehensive schema of challenges to be mastered, from "Narcotics & Criminal Activity" through that ultimate in existential circularity, "Coalition Knowledge & Underst[anding]." (See figure, "Afghanistan Stability.") But power-point presentations, with their "rigid lists of bullet points…that take no

account of interconnected political, economic, and ethnic forces," were used by General Tommy Franks to plan the Iraq invasion in 2003 with "vague" slides instead of precise orders. And military briefers used power-point slides to brief President Obama when he was planning his Afghan surge in late 2009, perhaps with similarly dismal results.[111] As in Vietnam, this "illusion of control" has encouraged ten years of open-ended pacification, a relentless escalation to over 100,000 U.S. troops, and military expenditures, along with Iraq, of $1 trillion and rising.[112]

Conclusion:

In contrast to Great Britain's superseded empire of land and sea, Washington's global reach thus seems bent on a century-long trajectory toward extra-terrestrial control of all space beyond and beneath traditionally sovereign territory--cyberspace, maritime depths, electro-magnetic spectrum, atmosphere, and exosphere. If we compare the technological capacity of U.S. pacification campaigns past and present, there have been enormous increases in capacity, speed, and accuracy, moving from impressionistic monthly estimates of Vietnamese village loyalty to nanosecond biometric identification for millions of individual Iraqis. The faint electronic worm that Igloo White once traced across a tiny IBM computer monitor to track truck convoys rumbling down the Ho Chi Minh Trail has given way to tens of thousands real-time visual images from daily drone operations over Afghanistan that can identify, with lethal accuracy, targets as small as single human body.

This progress, should it be that, raises questions about the ultimate efficacy of this integration of information and coercion. Will this burgeoning information infrastructure produce an apogee of "hard power" for long-term U.S. global dominion, exempting America from the usual cycle of imperial decline? Or it will somehow blind Washington to the inexorable erosion of its hegemony through soft-power losses of economic influence and moral suasion? While reliance on data divorced from cultural context contributed to past imperial defeats such as Vietnam, it is still uncertain, midst several ongoing wars, what the future might bring.

At the risk of joining that long lineage of historians who have proven consistently and often comically inept at prediction, there seem at least two alternative readings of America's Vietnam past and its global future. In its overwhelming wealth of data, this digital regime of biometric identification and electronic warfare can readily foster, like its predecessors, an imperial hubris that can lead to a latter-day Vietnam debacle. As in Indochina, such amassing of data not only creates an "illusion of control," but it also does so at the expense of ignoring those deeper cultural dimensions of societies within its ambit. While electronic information systems, integrated into a matrix of

military power, have helped obtain short-term military objectives in the Middle East, they too might contain a similar germ of hubris, an inclination to imperial overreach. If this interpretation obtains, then Washington might someday suffer a devastating defeat, succession of defeats, or slow erosion of economic substance through endless wars of choice, bringing the corrosive combination of rising resistance, domestic exhaustion, and attenuated global reach that afflicted earlier empires--Spain, France, and Britain.

Alternatively, after a century of development through two technological regimes, manual and automated, Washington might be creating a uniquely agile information infrastructure for effective force projection over vast territories. Within the long arc of technical progress, future military defeats might prove, as in Vietnam, momentary set backs, with each passing crisis masking a self-correction that moves this expanding information architecture ever closer to perfection. Through military force directed with economy and precision via an agile, almost infallible information infrastructure, the United States may escape the classic imperial dyad to achieve dominion in excess of economic influence. If this latter interpretation is correct, then continuing technological progress could exempt Washington from past patterns of imperial decline, creating something akin to an endless American empire.

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